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ABSTRACT

This report focuses on the learning and development of primary and secondary school children, employing an "ecology of human development" model. This model is defined as involving the scientific study of the accommodation between growing human beings and the changing immediate settings in which they live and learn. The conceptual framework for the study is described, and then applied to an analysis of the environment of the school age child. Environmental factors that should have the most powerful impact on school effectiveness, from this theoretical viewpoint, are explored. A number of previous studies are described and analyzed, in order to illustrate the utility of the ecological model. (Author/WP)

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School Effectiveness in Ecological Perspective

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An ecological perspective on factors influencing school effectiveness involves an application of a theoretical model for what the senior author has called the "experimental ecology of human development" (Bronfenbrenner, 1977). If schools are seen as major institutions fostering human development, then all of the principles of the ecology of human development pertain to educational research generally (Bronfenbrenner, 1976). In this paper, however, we shall employ the ecological perspective somewhat more narrowly by focussing on the learning and development of children while they attend primary and secondary school, and by exploring the environmental factors that, from this theoretical viewpoint, should have the most powerful impact on school effectiveness.

We begin by providing a synopsis of the conceptual framework for an ecology of human development. We then apply this conceptual framework to an analysis of the environment of the school age child in order to show how the theory illuminates familiar research problems and generates new ones. In the course of this analysis, we utilize a number of outstanding studies to illustrate the power of the ecological model both in relation to research already accomplished, and scientific possibilities still to be realized.

I. Elements of an Ecological Perspective

The basic tenets of an ecological approach to the study of human development are conveniently summarized in a series of definitions. The first of these definitions specifies what is meant by the ecology of human development. Definitions 2-6 describe the four hierarchically-nested levels of the ecological environment. Definition 7 provides an ecological formulation of

the concept of development. Finally, Definitions 8 and 9 identify two important methodological features of ecological research, the first a sine qua non, and the second, an all too seldom used strategy of choice.

Definition 1

The ecology of human development involves the scientific study of the progressive, mutual accommodation between growing human beings and the changing immediate settings in which they live and learn, as this process is affected by relations both within and between these immediate settings, as well as the larger social contexts in which the settings are embedded. We shall argue that viewing educational development in analogous terms will prove advantageous for scientific work and pedagogical practice.

Definition 2

The ecological environment is conceived topologically as a nested arrangement of concentric structures, each contained within the next. These structures are referred to as micro-, meso-, exo-, and macrosystems, defined as follows:

Definition 3

A microsystem is a pattern of activities, roles, relations, and psychophysical features experienced by the developing person, in this case, the pupil or the learner, in a given setting over a particular period of time. A setting is a place, such as a classroom, where the participants can readily engage in face-to-face communication. Other examples of settings include the home, church, playground, and workplace. The setting is one of the elements of a microsystem; the other elements include, time, psychophysical features, roles, activities, and relations. These elements are defined and described below.

Viewed from an ecological perspective, school effectiveness is a function, in substantial degree, of changes from grade to grade and school to

school in the structure and operation of classroom microsystems, particularly with respect to activities, roles, and relations. Yet, in contemporary educational research, only a limited number and range of these elements have been examined, with the result that many features potentially critical for the learning process remain to be investigated.

Definition 4

A mesosystem comprises the interrelations among two or more settings in which the developing person becomes an active participant. For instance, the mesosystem for an American 12-year-old would typically include interconnections between home, school, and neighborhood peer group. In sum, a mesosystem is a system of microsystems.

We shall argue that the capacity of the school to function effectively varies with the degree and nature of interconnections established between the school and other settings containing the child. If the proposition is valid, it has significance for the American educational scene, since there is some evidence to suggest that, in our society, such interconnections are relatively few, and presently decreasing both in number and strength.

Definition 5

An exosystem is an extension of the mesosystem involving settings that do not themselves contain the developing person as an active participant, but in which events occur that affect, and occasionally are affected by that person. Thus, for a school age child, the exosystem might include the parent's place of work, the high school attended by an older sibling, the parents' network of friends, the teacher's union, school board election campaigns, etc. There have been virtually no studies of the influence of exosystems on school effectiveness. Yet, there is reason to believe that such systems have profound impact on the capacity of schools to perform their educational function.

Definition 6

The macrosystem encompasses the overarching patterns of stability and change, at the level of the subculture or the culture as a whole, in forms of social organization and associated belief systems and life-styles. Such patterns result in similarities among the lower order systems to which particular groups of persons are exposed. For example, within a given society, one school classroom looks and functions much like another. It is as if all had been constructed from the same blueprint. Similarly, from city to city within a given society, one urban slum resembles another, as do neighborhoods where young executives live, the Italian section of town, etc. And associated with each of these subcultures are characteristic patterns of ideology and life style that are reflected in educational goals and practices. As a result, the classroom experiences of children from a given socioeconomic, ethnic, or religious group tend to be similar.

To be sure, variations at the level of the macrosystem have often been investigated in educational research, but almost exclusively in the form of differences in academic performance (which are often substantial and constitute a major educational problem in our nation). Little attention has been given, however, to scientific study of the ecological contexts experienced by children from diverse subcultural groups. It is our contention that one key to the understanding and solution of the learning difficulties experienced by children from certain segments of American society lies in the systematic analysis of the properties of their learning environments, not only at the level of the microsystem in the immediate setting, but also in the relation of this setting to the surrounding meso- and exosystems. Some research evidence is presented in support of this more differentiated ecological approach to the study of class and cultural differences in educational performance and school effectiveness.

Definition 7

Having specified the nature of the ecological environment, we are now in a position to provide an ecologically oriented definition of human development. This formulation takes cognizance of the fact that development never takes place in a vacuum, but is always embedded and expressed through behavior in a particular environmental context. Specifically, we define human development as a two-fold process through which the person acquires a more extended and differentiated conception of the ecological environment, and becomes motivated and able to engage in activities that reveal the properties of, sustain, or restructure that environment at levels of similar or greater complexity in form and content. In due course, we shall make the unorthodox proposal that school effectiveness be evaluated in terms of the extent to which the child's experiences in school contribute to human development as defined in the foregoing ecological conception. We shall also suggest some methods for carrying out evaluations of this kind.

Definition 8

Ecological validity refers to the extent to which the environment experienced by the subjects in a scientific investigation has the properties it is supposed or assumed to have by the investigator. In our view, research on school effectiveness has suffered from failure to recognize that school environments, or other settings in which the learning process is assessed, have rather different meanings for children from varying ecological backgrounds. The identification and recognition of these differences can avert invalid conclusions and improve the design and interpretation of research so as to permit more effective application of scientific findings to educational practice.

Definition 9

A transforming experiment, a concept borrowed from Soviet psychology (Bronfenbrenner, 1976), refers to an investigation that calls into question or

actively alters practices or beliefs that are part of the prevailing macrosystem in which the research subjects live. We propose that experiments of this kind are essential for two purposes; first, to understand the nature, strengths, and weaknesses of exiting educational forms and practices; second, to modify these forms and practices, or introduce new ones that will result in the improvement of school effectiveness in contemporary American society.

II. School Effectiveness and the Microsystem

To assess and enhance school effectiveness at the level of the microsystem, it is necessary to specify in greater detail the elements of that system as they are manifested in an immediate educational setting, such as the classroom. But before turning to a discussion of the elements themselves, we call attention to a critical term in the definition of the microsystem; namely, the word "experienced." The term is used to indicate that the elements of role, activity, relation, and physical features are defined phenomenologically; that is, by the way in which they are perceived by the persons in the setting.

This emphasis on the phenomenological domain springs neither from any antipathy to behavioristic concepts nor from a predilection for existential philosophical foundations. Quite the contrary. The resort to phenomenological definitions is dictated by a hard fact. Very few of the external influences significantly affecting human behavior and change can be described solely in terms of objective physical conditions and events; overwhelmingly the aspects of the environment that are most powerful in shaping the course of development are those that have meaning to the person in a given situation.

There is, of course, nothing original in this formulation. It draws heavily on the work of theorists from a variety of disciplines. Thus, in philosophy and psychology, it builds on the phenomenological concepts of

Husserl (1950), Köhler (1938), Katz (1930), and especially, on Lewin's construct of the "psychological field" (1935, 1951). In sociology, an analogous formulation has its roots in the role theory of George Herbert Mead (1934), and is epitomized in Thomas's concept of the "definition of the situation" (Thomas & Thoms, 1928). In psychiatry, the view was brilliantly applied to the study of interpersonal relations and psychopathology by Henry Stack Sullivan (1947). In education, the orientation is found in Dewey's emphasis (1913, 1916, 1931) on designing curricula that speak to the everyday experience of the child. Finally, in anthropology, the approach has been extended to the analysis of larger social systems, most notably by Ralph Linton (1936) and Ruth Benedict (1934). Its significance for the general study of human behavior is summed up in what is perhaps the only proposition in science that approaches the status of an immutable law--W. I. Thomas's inexorable dictum "If men define situations as real, they are real in their consequences" (Thomas & Thomas, 1928, p. 572).

Turning, then, to the microsystem, we find that four of its elements are phenomenologically defined. These include activities, roles, relations, and psychophysical characteristics.

The Nature of Molar Activities

An activity is what a person in the setting perceives himself or someone else as doing over a period of time. Thus an activity is seen as something that is "going on," a process that has more than a beginning and an end. In this respect, an activity is distinguished from an act, which is perceived as instantaneous, taking place at the moment. Examples of acts are: child raises hand; teacher asks child a question. In contrast, the following are activities: the child is singing a song; the teacher is explaining the assignment. In sum, an activity is a molar, rather than a molecular unit.

We propose that activities so defined, that is, as ongoing, molar behaviors that are embedded in a social context and have meaning to the participants, are of special significance for the scientific study of human development, including those aspects of development that occur in formal educational settings. Activities are important on a number of counts. First, they represent major, and as yet scientifically unexploited, manifestations of a child's level of development in all its aspects--cognitive, emotional, motivational, and social. Yet, as researchers, we know very little about the molar activities of children. From laboratory studies, we have accumulated mountains of data about molecular acts, but our information about larger behavioral units, the kinds of activities school children engage in in everyday life, both inside and outside the classroom, remain largely undocumented.[1] Moreover, we shall argue that such activities provide an important basis for assessing school effectiveness and the environmental conditions that foster its achievement. We could make this case more persuasively if there existed a taxonomy of the molar activities of school age children. Unfortunately, no such classification system is available for youngsters at this age. A code has recently been developed, however, for analyzing the molar activities of preschool children and their caretakers in modern industrialized societies (Nerlove et al., Note 1). The code categories were based on observations of 3-5 year old children and their caretakers both in the home and in preschool settings. It is not unreasonable to suppose that these categories anticipate, at least at a general level, the types of activity that will also be encountered among children in the early primary grades. In any event, the taxonomy can serve to illustrate the principal points we wish to make.

For purposes of convenience, the categories are organized in ten domains. The first domain, entitled Non-engagement, consists of rather passive activities, such as Sleeping, Resting, Drifting (wandering aimlessly around), etc. The most focussed behavior in this domain is Waiting. A second sphere contains activities that involve the person's paying attention to people or ongoing events without active participation. Other areas deal with enduring emotional states, non-fantasy and fantasy play, games, musical activity, responsibilities and work, activities with a predominantly social purpose, and, of course, educational processes.

Within categories, activities are analyzed and subclassified in terms of function and complexity. For example, play is characterized by whether it involves fine or gross motor coordination, object manipulation, and degree of prestructuring. If the play entails fantasy, it is further differentiated by presence of non-human and human transformation (e.g., a block becomes a car or a person); and by the range of fantasy elements employed (e.g., imagined objects, persons, mythical beings, settings, roles, and fantasical activities, including the speaking of parts). Games are differentiated by the degree to which they involve chance, physical skill, knowledge and memory, strategic thinking, standards of performance, and interpersonal competition. Responsibilities and Work cover self-care, chores, taking care of others as an obligation, and a range of volunteer and paid jobs. Social Activities include seeking and maintaining proximity, social conversation, helping behavior, and efforts to influence and organize the behavior of others. Finally, educational activities encompass both teaching and learning, formal and informal, in relation to particular content areas.

Each activity classified in the code is also evaluated for the degree of motivational involvement exhibited by the actor as reflected in his or her

initiative, level of concentration, resistence to distraction, and completion of the task.

In addition to offering a taxonomy of activities, the code permits classification of another, closely related element of the microsystem: psychophysical features. These refer to any aspect of the physical environment that is employed or produced in the course of an activity. Such aspects include objects (e.g., toys, games, educational materials, tools, pieces of furniture, drawings, modeled figures, etc.) or structural features of the environment (e.g., seating arrangements, room subdivisions, etc.). A preliminary taxonomy of objects and products utilized by preschool children is included in the Transcultural Code mentioned above.

The Educational Significance of Molar Activities

Whereas the developmental implications of children's activities may be readily apparent, the reader may well question their relevance to formal education in general, and school effectiveness in particular. To be sure, the taxonomy mentioned above does include a section on explicitly educational activities, but, paradoxically, these do not constitute the most important bases of our argument for focussing attention on children's activities in research on learning and teaching. Rather, in viewing the classroom as a microsystem, we would urge at least equal emphasis on activities in the following domains: Non-engagement, Attending, Non-fantasy and Fantasy Play, Games, Responsibilities and Work, and Social Activities. The relevance of the first two spheres for the evaluation of school effectiveness is self-evident and requires no further comment. The remaining areas, however, merit some discussion, since they are not accorded much priority in most contemporary analyses of school performance.

The educational function of play, fantasy, and games. Although the importance of such activities to developmental processes has been stressed in

theoretical writings and clinical observations of Piaget (1962), they have received virtually no attention in American pedagogical practice or educational research. In a number of other societies, however, play, fantasy, and games are a part of the formal school curriculum and serve as topics of extended scientific study. The Soviet Union is a case in point. The research emphasis stems from the theories of Vygotsky and his disciples (Vygotsky, 1962; Leontiev, 1964; Zaporozhets & Elkonin, 1971; Zaporozhets & Markova, 1976), who view play, fantasy, and games as important activities for cognitive, motivational, and social development. Proceeding from this theoretical base, Soviet pedagogues have incorporated many play activities, both imaginary and real, in the preschool and elementary curriculum (Zaporozhets & Elkonin, 1971; Venger, 1973; Zhukovskaya, 1976). As the children grow older, increased importance is accorded to the educational benefits of what they call rolevaya igra, role playing games, in which children take roles that are common in adult society; e.g., store clerk, customer, nurse, patient, etc. The senior author has published a fuller description elsewhere (Bronfenbrenner, 1970a).

Soviet educators utilize play, fantasy, and games primarily to develop what they refer to as "communist morality." From an American perspective,

> the outcome emerges as a remarkably high level of social conformity and submission to authority. These effects are documented in the results of experiments on reactions to social pressure on the part of Soviet school children compared to age-mates from the United States and other Western societies (Bronfenbrenner, 1967, 1970b; Garbarino & Bronfenbrenner, 1976; Shouval et al., 1975; Kav Venaki et al., 1976). There is reason to believe, however, that play, fantasy, and games can be just as effectively utilized to develop initiative, independence, and equalitarianism, and indeed, probably function in this fashion in contemporary American settings both within and outside of school.

Regrettably, the relevant research has yet to be carried out. To do so will require an appropriate taxonomy of activities that extends to children of elementary school age and beyond. We anticipate that various aspects of play, fantasy, and games will relate not only to the development of conformity versus autonomy but also to the evolution of particular forms of cognitive function. It is noteworthy in this regard that, in the course of pilot testing the Transcultural Code, the most complex cognitive operations were observed in the realm of fantasy play.

Social and work related activities. The relevance of these activities to the work of the school can be expressed in two statements for which no research documentation exists at present (a fact which, paradoxically, can be interpreted as reflecting the validity of the statements themelves). First, in the United States it is now possible for a young person 18 years of age to graduate from high school without ever having had to do a piece of work on which somebody else truly depended.

If the young person goes on to college, the experience is postponed for another four years. And, if he or she goes on to graduate school, some might say, the experience is postponed forever.

The second statement, in our view, sets forth an even more disturbing outcome. In the United States, it is now possible for a young person 18 years of age, female as well as male, to graduate from high school, college, or university without ever having cared for, or even held, a baby in their arms; without ever having had to look after someone who was old, ill, or lonely; without ever having had to comfort or assist another human being who really needed help. Again, the psychological consequences of such a deprivation of human experience are as yet unknown. But the possible social implications are fairly clear, for--sooner or later, usually sooner--all of us suffer

illness, loneliness, and the need for help, comfort, companionship, or care. No society can long sustain itself unless its members have learned the sensitivities, motivations, and skills involved in assisting and caring for other human beings.

Yet, the school, which is the institution carrying primary responsibility for preparing young people for effective participation in adult life, does not, at least in American society,[2] give high priority to providing opportunities in which such learning could take place. This would not be impossible to do. For some years the senior author (Bronfenbrenner, 1974a) has been advocating the introduction in our schools, from the earliest grades onward, of what he calls a curriculum for caring. The purpose of such a curriculum would not be to learn about caring, but to engage in it; that is, children would be asked to take responsibility for spending time with and caring for others--old people, younger children, the sick, and the lonely. It would be essential that such activities be carried on under firm supervision, and this supervision could not be provided by already overburdened teachers. Instead, the supervisors should be drawn from persons in the community who have experience in caring--parents, senior citizens, volunteer workers, and others who understand the needs of those who need attention, and the requirements on those who would give it. Obviously, such caring activities could not be restricted to the school--they would have to be carried on in the outside community. It would be desirable to locate caring institutions, such as day care centers, adjacent to or even within the school, but it would also be important for the young caregivers to come to know the circumstances under which their charges live and the people in their lives. For example, older children taking responsibility for younger ones might come to know the latter's family and become acquainted with their neighborhood by escorting them

home from school. In this way, the older children would come to know at first hand the living conditions for the people in their community.

Clearly, before such a curriculum is introduced on a broad scale, it should be tested out experimentally, and its putative effects evaluated along with possible unintended consequences. A research effort of this kind represents an excellent example of what we have called a transforming experiment, since it calls into question and alters in a substantial way a prevailing pattern in the American macrosystem, the existing "blueprint" for what a school curriculum should and should not contain.

But in the interim, it would be important to examine the extent and nature of social and work-related activities that now occur in American classrooms and the effect they have on development through childhood into adult life. That classroom experiences do have long range effects on how the person ultimately relates to work and social life is strongly indicated by findings of an outstanding series of studies by Kohn on the nature and consequences of social class as a context for human development (Kohn, 1963, 1969, 1977; Kohn & Schooler, 1973, in press). Kohn's work constitutes our first example of a classic ecological investigation. The general research question Kohn addresses is by no means a simple one. Noting that socioeconomic status is a pervasive source of variance in virtually every aspect of human activity, he seeks to find out, in his own words, "What is it about 'class' that makes it important for so much human behavior" (1969, p. 3).

Operationally, Kohn starts with a more restricted focus: the relationship of social class to the development of values. But what is significant about his work is not where he begins but where he ends up. Without explicitly employing an ecological model, he commences with what is clearly a macrosystem phenomenon, the class structure of the society, and then proceeds to trace its manifestations at a concrete, microsystem level in specific life settings. To

begin at the beginning, working with samples of adult married men with children, Kohn finds that the principal difference in value systems associated with social class position focuses around the issue of self-direction versus conformity to external authority. Whether in relation to parental values, self-conceptions, attitudes toward work, or orientation to society,

> The higher a person's social class position, the greater the likelihood that he will value self-direction, both for his children and himself, and that his orientational system will be predicated on the belief that self-direction is both possible and efficacious. The lower a person's social class position, the greater the likelihood that he will value conformity to external authority and that he will believe in following the dictates of authority as the wisest, perhaps the only feasible, course of action. (Kohn, 1977)

What has all this to do with school effectiveness? Following established practice, Kohn uses as his measure of social class a combined index based on occupation, education, and income. At several points in the analysis, however, he endeavors to identify the relative contributions of each to the value orientation of his adult male subjects. Income (along with the person's subjective identification of his own class position) turns out to be least important. The key factors are education and occupational position, with the former predominating.

> Education is the more potent of the two dimensions, being more strongly related to parental values, to self-values, to judgments about the extrinsic feature of jobs, and--most strongly of all--to authoritarian conservatism.[3] (Kohn, 1969, p. 132)

Moreover, the effects of education apparently exert their influence independent of job status.

> The relationship of education to values and orientation is not greatly affected by occupational status or by any other experiences that we have examined. The importance of education for men's values and orientation--at least under the conditions of life in the United States in the mid-1960's--is great, no matter what conditions men subsequently encounter. (ibid, p. 191)

What about education produce these effects? Regrettably, although Kohn undertook a systematic analysis of the work situation, he did not do so for schooling. Information in this sphere was confined to the number of years of education, treated as a linear variable.[4] Kohn does offer a relevant hypothesis, however, and presents some indirect evidence for its support.

> Education provides intellectual flexibility and breadth of perspective that are essential for self-directed values and orientation; lack of education must seriously interfere with men's ability to be self-directed. (1969, p. 186)

Consistent with this interpretation, statistical control on a measure of flexibility (based on how well men dealt with problems in the interview) substantially reduced the correlations between educational level and value orientations.

The question remains, however, as to what aspects of the school experience foster intellectual flexibility. Paradoxically, an answer to this question is suggested by the results of Kohn's analysis of quite another context, the father's work situation. On the basis of interview data, each job was analyzed in terms of what ultimately became three major parameters: 1) the

substantive complexity of the work the person does in the realm of things, data, ideas, and people; 2) the degree of routinization and repetitiveness in required tasks; and 3) closeness of supervision. These aspects of the job situation were then related to each man's value orientations, in the areas of parenthood, the world of work, the self, and society in general (including such parameters as authoritarian conservatism, criteria of morality, trustfulness, and stance toward change). All of these spheres were affected by certain critical aspects of the work experience. Specifically, Kohn found that

> The crucial occupational conditions are those that determine how self-directed one can be in one's work--namely, freedom from close supervision, substantively complex work, and a non-routinized flow of work. These occupational conditions are empirically tied to valuing self-direction and to having an orientation to oneself and to the outside world consonant with this value. (Kohn, 1977, p. 15)

What we are suggesting is that a parallel analysis of educational experience, particularly as one moves from the elementary grades, through junior and senior high school, into college, would reveal differences along these same parameters that, in turn, would be correlated with changes in value orientations and corresponding behavior in all walks of life. The farther one gets in school, the more likely one would be to experience freedom from close supervision, non-routinized flow, substantively complex work, and opportunity for self-direction. And if one holds level of schooling constant, it is again along these same parameters that the experiences of lower versus upper class children would be most apt to differ both in school and out.

In sum, this line of thinking argues for the importance, in educational research, of investigating systematically the changes in activity that occur from one grade to the next, from one school to another, and for pupils from different socioeconomic, ethnic, and cultural groups within a given educational setting. It is important to recognize that group differences in activity, and hence in learning may arise not only from the varying experiences children bring from their home backgrounds but also from differential treatment by the teacher and other pupils.

The last point calls attention to the fact that children's classroom experience varies not only in the content of the activities that they engage but also in the context of social roles and relationships in which these activities are embedded. The same dual dimensions emerge from Kohn's work, in which critical aspects of the work setting affecting the development of value orientations included not only "cognitive complexity" but also "freedom from close supervision," and "opportunity for self-direction." Obviously, classroom settings can also differ along interpersonal dimensions. Any conceptual model for analysis of the microsystem must therefore include some social-structural components. The remaining two elements of role and relation speak to this theoretical need.

Roles in Educational Settings

Whether or not a person perceives himself as having control over an activity is in part a function of his role. Consistent with our phenomenological orientation, a role is defined as a reply to the question "Who is this person?", answered from the perspective of the participants in the setting. Upon first consideration, answers to this question for a classroom setting appear rather trivial and inconsequential. Typically, there are only two roles in evidence, at least in American schools--teacher and pupil. We now anticipate the discussion by stating a hypothesis in a form that is more provocative than scientifically precise: If there are only these two roles in the classroom,

then so much the worse for school effectiveness! A more systematic formulation is most clearly stated in the form of two hypotheses rather than one.

Hypothesis 1

Learning is facilitated if the learner is placed in roles that entail execution of the activities to be learned.

Hypothesis 2

Learning is facilitated if the learner is exposed to other persons engaged in roles that entail execution of the activities to be learned.

Again, upon initial consideration, Hypothesis 1 may appear trivial and inconsequential. We suggest, however, that it is much more mighty than it appears, equal if not exceeding in power the efficacy of such over-researched influence mechanisms as reinforcement and modeling. The dramatic capacity of role allocation to shape--and even to compel--human behavior and development is elegantly demonstrated in our second example of a classic ecological study, Zimbardo's investigation of "Interpersonal Dynamics in a Simulated Prison" (Haney et al., 1973). The research represents a "transforming experiment" in which prevailing institutional practices are not changed, but certainly called into serious question. Working with a sample of "normal" college students who served as volunteers, Zimbardo and his colleagues randomly assigned half to role-play prison guards for eight hours each day, while the remainder acted as prisoners incarcerated in a campus dormitory psychologically altered to resemble a prison. The investigators summarize their findings as follows:

> Continuous, direct observation of behavioural interactions was supplemented by video-taped recording, questionnaires, self-report scales and interviews. All these data sources converge on the conclusion that this simulated prison developed into a psychologically compelling prison environ-

> ment. As such, it elicited unexpectedly intense, realistic and often pathological reactions from many of the participants. The prisoners experienced a loss of personal identity and the arbitrary control of their behaviour which resulted in a syndrome of passivity, dependency, depression and helplessness. In contrast, the guards (with rare exceptions) experienced a marked gain in social power, status and group identification which made role-playing rewarding.
>
> The most dramatic of the coping behaviour utilised by half of the prisoners in adapting to this stressful situation was the development of acute emotional disturbance--severe enough to warrant their early release. At least a third of the guards were judged to have become far more aggressive and dehumanising toward the prisoners than would ordinarily be predicted in a simulation study. Only a very few of the observed reactions to this experience of imprisonment could be attributed to personality trait differences which existed before the subjects began to play their assigned roles. (Haney et al., 1973, p. 69)

We know of no American research on the effects of role allocation in classroom or school settings. This is hardly surprising, in view of the paucity of roles typically existing in American classrooms. As has already been mentioned, the placing of children in a variety of roles conducive to learning is an established practice in Soviet education, but studies of the phenomenon by Russian scholars are more anecdotal than vigorous. The possibility and power of role allocation in an American children's setting is illustrated,

however, in another classic transforming experiment: Muzafer Sherif's dramatic alteration of behavior among boys attending a summer camp. In his "Robbers Cave Experiment," Sherif and his colleagues (1961) were able, within the space of a few weeks, to induce markedly different levels of aggression, cooperation, and effective problem solving, essentially by changing role definitions. Analogous experimental strategies in classroom settings, though certainly feasible in principle, have yet to be carried out in practice. Until such strategies are applied, it will be instructive to analyze existing educational practice to determine to what extent role-differentiated classrooms exist in American society and/assess the impact of such differentiation on educational outcomes.

Although general support for Hypothesis 2 can be drawn from the exhaustive body of basic research on observational learning, there have been no investigations of the specific effects of systematically exposing school children, in the course of their formal education, to adults engaged in a variety of social and occupational roles. The most obvious reason for the absence of such research is that association with other adults besides teachers is not viewed as a relevant aspect of school experience in our society. As we have already noted, it is so regarded in a number of other cultures, notably in the People's Republic of China and in the Soviet Union. In the latter country, consistent with the emphasis in the communist ethic placed on workers and work, a systematic effort is made to bring into the school persons engaged in a variety of occupations, ranging from scientists and poets to farmers and factory workers, who tell about their work, sharing tools and materials; in return, the pupils make visits to local factories, stores, and other working establishments. Of particular interest in this regard is the institution of shevstvo, literally--and badly--translated as "patronage," but perhaps more accurately described as "group adoption." In this system, work establishments

—such as a department in a factory, an office, an institute or a business enterprise--adopt a group of children as its "wards." The children's group is typically a school classroom, but it may also include a nursery, a hospital ward or any other setting in which children are dealt with collectively. The workers visit the children's group wherever it may be, and also invite the youngsters to their place of work in order to familiarize the children with the nature of their activities and with themselves as people. The aim is not vocational education but rather acquaintance with adults as participants in the world of work.

There seems to be nothing in such an approach that would be incompatible with the values and aims of our own society, and the senior author has urged its adaptation to the American scene. Acting on this suggestion, David A. Goslin (1971) then of the Russell Sage Foundation, persuaded the Detroit Free Press to participate in an unusual experiment as a prelude to the 1970 White House Conference on Children. By the time the project was over two groups of 12-year-old children, one from a slum area and the other predominantly middle class, had spent six to seven hours a day for three days in virtually every department of the newspaper, not just observing but participating actively in the department's work. There were boys and girls in the pressroom, the city room, the composing room, the advertising department and the delivery department. The employees of the Free Press entered into the experiment with serious misgivings, but the children were not bored, nor were the adults--and the paper did get out every day.[5]

Unfortunately, it was not possible to attach a research component to this project. Had this been done, it would have constituted another "transforming experiment" in which the prevailing "blueprint" for a basic institution of the society was radically altered. In this instance, the changes were introduced

not only within two such institutions--the school and the workplace--but also in the relation between them. Hence, in terms of our theoretical model, this is a transforming experiment at the level of the mesosystem.

In the absence of innovative change in American educational practice, it is of course still possible to investigate Hypothesis 2 simply by assessing individual differences among children in the extent to which they have been exposed to persons engaged in a variety of social and occupational roles and relating these differences to measures of educational achievement, even of the most conventional sort.

Relations in Educational Settings

When social roles generate behavior that is directed toward or reacted to by another person, another element of the microsystem is produced; namely, a relation. To provide a formal definition, a relation obtains whenever two or more persons in a setting pay attention to or participate in another's activities. Hence, the limiting case of all relations is a dyad, a relation between two persons.

Dyadic properties. The dyad is an especially critical context for learning and development. To clarify its importance, we distinguish three different kinds of dyads in order of increasing complexity.

1. An observational dyad is one in which the members are engaged in different activities, but at least one of the participants is attending to the activity of the other. This type of dyad is important because it offers the necessary minimal condition for observational learning; i.e., one person can serve as a model in stimulating and shaping the activity of the other. An observational dyad also sets the stage for the formation of a second, more active form of two-person system.

2. A joint activity dyad is one in which the two persons are engaged in what they regard as a shared activity toward which each is making a significant contribution. There are theoretical reasons for expecting that such a dyad presents especially favorable conditions for learning, not only in the course of joint activity, but also in increasing motivation for pursuing and perfecting the activity after the participants are no longer together. The facilitative powers of a joint activity dyad derive from several distinctive properties:

   a. Reciprocity. In addition to providing opportunity for observational learning, joint activity necessarily involves some measure of reciprocal interaction; that is, what A does influences B and vice versa. Such mutual feedback develops a momentum of its own that motivates the participants not only to persevere but to engage in progressively more complex patterns of interaction, as in a ping-pong game in which the play becomes more rapid and intricate as the game proceeds. The result can be an acceleration of the learning process, both in its pace and its complexity.

   b. Relative proficiency refers to the comparative degree of skill and knowledge that each of the participants exhibits in the course of an activity. We suggest that learning is enhanced when there is some disparity in the level of proficiency exhibited by the participants in the dyad, but this discrepancy is not too great.[6] In other words, it is important that the

learner be challenged but not overwhelmed. Note, however, that the stipulated relationship does not require that the partner always be somewhat superior to the learner; the reverse may also be true. In other words, the assumption is that pupils who teach will also learn.

c. Balance of power. As the foregoing point implies, even though the processes involved in a joint activity dyad are reciprocal, one participant may be more influential than the other. The extent to which A's behavior dominates B's, or vice versa, is referred to as balance of power. There are theoretical reasons to expect that the optimal conditions for learning are those in which the balance of power gradually shifts in favor of the learner.

d. Affective relation. As the members of a dyad engage in joint activity, they are likely to develop more pronounced feelings toward each other. These feelings may be mutually positive, negative, mixed, or asymetrical, and tend to influence the course of learning accordingly. Especially when they are positive, they also facilitate the formation of our third type of two-person system, a primary dyad.

3. A primary dyad is one that continues to exist phenomenologically even in the absence of the other person; i.e., the other person continues to exist in awareness and to influence behavior though no longer present. For example, a child misses his mother or a friend, when that person is away, or imagines what they would be doing if the person were present. We propose that primary dyads function as a powerful force in motivating learning. Thus a child

> is more likely to acquire skills, knowledge, values, etc. from a person with whom a primary dyad has been established than from one who exists for the child only during the time that both parties are actually present in the same setting. Also, of all three types of dyads, the primary dyad will be the most effective in increasing motivation to pursue and perfect a previously shared activity once the participants are no longer together.

What is the significance of these distinctions for assessing learning environments such as the classroom? The answer to this question may be given most succinctly in the form of a crude hypothesis stated as follows:

Hypothesis 3

> Learning effectiveness, however measured, will vary directly as a function of the frequency of occurrence in a setting of observational, joint activity, and primary dyads.

A corollary hypothesis posits a developmental sequence in the emergence of the three types of dyads in an educational setting:

Hypothesis 4

> In a classroom or other learning environment, the creation or appearance of observational dyads will facilitate the formation of joint activity dyads, which, in turn, will foster the development of primary dyads.

To the writers' knowledge, neither of the foregoing hypotheses have been investigated in research on environmental factors affecting school performance, but such an application could readily be made.

N+2 systems. The dyad has importance in yet another respect; it is the building block of the microsystem. Thus it makes possible larger structures--triads, tetrads, pentads, or, if one prefers music to mathematics, trios, quartets, quintets--a series of ensembles that provide contexts for develop-

mental themes. For each has distinctive properties that give it special powers and limits as mediators of evolving behavior. It is our thesis that certain types of developmental experiences--including some within the sphere of formal education--are possible only in higher order structures beyond the dyad, referred to henceforth as N+2 systems. Specifically, when there are only two persons present, the only possible interpersonal effects are direct influences of A on B,or B on A. The introduction of a third party permits a new kind of indirect impact, the influence of C on the relation between A and B. We refer to this phenomenon as a second order effect. As the senior author has indicated elsewhere (Bronfenbrenner, 1977), the third party in the situation can act either as a powerful catalyst or as an inhibitor to activity between the other two members. For example, as a catalyst, he can serve as a source of security in unfamiliar situations, facilitate the formation of new relations, provide a model for social interaction, reinforce initiatives, strengthen the power of the second person as a behavior model for the first, or function as an aide, substitute, or scapegoat.

Although some research has been conducted on second order effects in family settings (Parke, 1976; Lamb, 1976a, 1976b, Note 2, Note 3; Pederson, Note 4), the present authors have been able to find only one study in which this phenomenon has been documented in a school context. Seaver (1973) utilized an ingenious research design to investigate the controversial issue of induced teacher expectancies first reported by Rosenthal and Jacobson (1968). Seaver's work was motivated by some reservations regarding the ecological validity of methods previously employed for the study of this process. In his words:

> Most previous attempts to demonstrate the teacher expectancy effect have used experimental manipulations

> of teacher expectancies that were artificial and surely unusual in the experience of the teachers. Quite possibly these manipulations were also implausible to the teachers and induced psychological states other than the desired expectancies. (Seaver, 1973, p. 334)

To achieve ecological validity, Seaver examined differences in the academic achievement of elementary school pupils with older siblings who had had the same teacher and performed either exceptionally well or exceptionally poorly. Children taught by teachers who had not instructed the older siblings served as controls. In contrast to earlier studies, which had produced inconsistent, weak, or questionable effects, the results of Seaver's natural experiment gave substantial support to the teacher expectancy hypothesis. As Seaver himself acknowledged, however, it was not clear who was the mediator of the observed effect. Were the teacher's expectations changed because of her prior experience with the older sibling, or did the younger sibling evoke a different response from the teacher because of the younger child's expectations created by the older sibling or by the parents (based on their previous acquaintance with the teacher), or both? Are we dealing with an effect solely within the microsystem of the classroom, or with a mesosystem phenomenon involving relations between home and school? This ambiguity in interpretation testifies to the importance of analyzing N+2 systems and higher order effects.

The fact that such systems have seldom been investigated in school settings is understandable given the prevailing conception, in the United States, of the classroom essentially as a dyadic system consisting of the teacher as one party and one or more pupils as the other. The cultural blueprint for classrooms can be somewhat different in other societies. The senior author

has described elsewhere (Bronfenbrenner, 1970b) the differentiated social structure of the Soviet classroom, and the systematic way in which semi-permanent substructures are utilized to maintain discipline, develop cooperation, and encourage pupils to become involved in facilitating the learning process for others. Consideration of these phenomena suggests that, as one moves from a dyad to higher order systems, the resulting structures may offer possibilities for facilitating motivation and learning through mutual assistance, complementarity, spelling each other off, and reinforcement, provided both directly and indirectly through third parties. The optimal size of systems for various types of educational tasks, and, more importantly, the optimal structure of such systems remain empirical questions that, once pursued, are likely to reveal new potentials for enhancing school effectiveness.

Networks. Relational structures can take yet another form that has implications for learning and school effectiveness. Thus far we have been discussing mainly N+2 systems that were simultaneous in the sense that all of the participants were present in the same setting at the same time. It is also possible for such structures to be sequential. An example is provided in Seaver's research, in which the older and younger siblings were present in the teacher's classroom only during periods that were two or more years apart on the average; yet, there can be no question that a three-person system involving the teacher and the two siblings was in fact operating.

We refer to such sequential N+2 systems as networks. At the level of the microsystem, networks are most likely to develop when the number of different persons active in a given setting exceeds three or four so that the likelihood that all will be present at the same time is reduced. In educational research, networks have of course been frequently studied through the use of sociometric techniques. From an ecological perspective, however, there

use has been quite limited. Thus most investigations focus on the sociometric status of individual pupils and the ways in which they are viewed by their classmates. A few investigations go a step further and examine the distribution of sociometric structures; i.e., dyads, triads, chains, cliques, open and closed systems, etc. Even rarer is the examination of the relation of such formal structures to the substantive elements of the microsystems; i.e., roles and activities. Rarest of all is the recognition that networks tend to be characterized by common belief systems and life-styles; in other words, they take on the characteristics of a mini-culture.

One study that did take cognizance of this important ecological property of networks is Coleman's (1961) classic research on "The Adolescent Society." Coleman demonstrated that student motivation for participation in and mastery of learning activities were dramatically influenced by the cliques to which the students belonged in the social structure of the school.

Coleman's work was ahead of his time. Indeed, the mainstream of educational research still has yet to adopt his broad ecological orientation in practice. From the theoretical perspective of the 1970's, however, it is interesting to note certain limitations in Coleman's implicit conception of the ecological environment. For example, mesosystems are given rather short shrift; one looks in vain for information about the degree to which the adolescents' social networks extended into the adult world. To be sure, there is some attention to the relation of parental values and constraints, but work and jobs, which play such a promiment role in Coleman's contemporary thinking about education (Coleman, 1972), are scarcely mentioned.

As one might expect of a sociologist, however, Coleman does not neglect the impact on schooling of larger social structurea at the level of the macro-

systems. Data are provided on the extent to which the pupils' social networks coincided with or intersected boundaries of social class, ethnicity, and religion. In the perspective of our ecological model, however, one wishes that Coleman had gone further to examine the influence on students of participation in networks that cut across socioeconomic, ethnic, or religious lines. Coleman's own theories would predict that such participation might have an impact on learning processes and outcomes.

The reader will have noted that our analysis of microsystem properties has penetrated into other systems levels as well. This is hardly surprising since relational structures such as dayds, N+2 systems, second order effects, and networks are also important features of higher order ecological systems. Specifically, these structures constitute the principal forms of interconnection that bind microsystems together into mesosystems. We turn next to an examination of the properies of the latter structures, and of the ways in which they may affect the processes and outcomes of formal education.

III. The Significance of the Mesosystem for School Effectiveness

We have defined the mesosystem as a set of interrelations between two or more settings in which the developing person becomes an active participant. What kinds of interconnections are possible for example, between home and school? We propose four general types:

1. Multisetting participation. This is the most basic form of interconnection between two settings, since at least one manifestation of it is required to define a mesosystem. It occurs when the same people engage in activities in more than one setting. Since such participation necessarily has to occur sequentially,

multisetting participation can also be defined as the existence of a face-to-face or first order social network across settings in which the developing person is a participant. At least one such network link is required to establish the existence of a mesosystem.

Each person who engages in more than one setting of a mesosystem is referred to as a direct interpersonal link. For example, Johnny enters school; his mother attends a PTA meeting; his teacher pays a visit to the home; or Johnny brings home a classmate to play. As the foregoing examples indicate, direct links can operate in either direction.

ii. Indirect linkage. When the same person does not actively participate in both settings, a connection between the two may still be established through a third party who serves as an intermediate link between persons in the two settings. In this case, participants in the two settings are no longer meeting face-to-face so that we speak of them as members of a second order network between settings. Such second order connections can also be more remote, involving two or more intermediate links in the network chain.

iii. Intersetting communications. These are messages from one setting transmitted to the other setting with the express intent of providing specific information to persons in that setting. The communication can take a variety of forms; i.e., directly through face-to-face interaction; telephone conversations; correspondence and other written messages; notices or

announcements; or indirectly via chains in the social network. The communication may be one-sided or occur in both directions.

iv. Intersetting knowledge refers to information or experience in one setting about the other. Such knowledge may be obtained through intersetting communication or from sources external to the particular settings involved; for example, library books.

We now discuss each of these four types of interconnections in greater detail.

Multisetting Participation

The most critical direct link between two settings is the one that establishes the existence of a mesosystem in the first instance; namely, the entry of the developing person into a new setting; for example, a child goes to school for the first time. Such an entry also constitutes an example of an ecological transition; that is, a move into a new and different ecological context. If the child goes to school on the first day unaccompanied and no one else from his home enters the school setting, there exists only a single direct link between the two microsystems. Under these circumstances, the transition, and the resulting mesosystem are referred to as monadic. Should the child be accompanied by his mother or an older brother, who goes with him into the school and introduces him to the teacher or to the other children, the transition and the mesosystem it creates become dyadic. Of course, the mother may not come to the school until a later point, or the teacher may visit the home, in which case the mesosystem becomes dyadic at that time. In the more general case, a mesosystem in which there are more than two persons who

are active in both settings is referred to as multiply-linked. A mesosystem in which the only interpersonal links, apart from the direct link involving the developing person, are indirect, or in which there are no additional links whatsoever, are described as weakly linked.

We make these distinctions not merely because they are logically possible, but because we believe them to be of significance for the way in which the child is able to function in the new settings which he enters. For example, a dyadic transition permits the formation of a three-person system immediately upon entry into the new setting, with all its potential for second order effects; the third party can serve as a source of security, provide a model for social interactions, reinforce the child's initiatives, etc. The extent of catalytic power of the intermediary depends on his or her relation with the child, as well as on the nature of the dyads that he or she establishes in the new setting; namely, whether they are only observational (the mother acts purely as a visitor), involve joint activity (the mother converses with the teacher), or develop into a primary dyad (the mother and teacher become good friends).

We may summarize these considerations in the form of four hypotheses:

Hypothesis 5

The capacity of a learning setting to be effective is enhanced if the learner's transition into that setting is not monadic; that is, if he enters the new setting in the company of one or more persons with whom he has participated in prior settings.

Hypothesis 6

The capacity of a learning setting to be effective is increased as a function of the number of direct interpersonal links between that setting and the home, as well as other settings in which

the learner is or has been an active participant. The least favorable condition for learning is one in which interpersonal links (beyond those involving the learner) are indirect or nonexistent.

Hypothesis 7

The capacity of a learning setting to be effective is magnified to the extent that interpersonal links involve persons with whom the learner has developed a primary dyad.

Hypothesis 8

The capacity of a learning setting to be effective is augmented to the extent that interpersonal links with other settings involve persons who engage in joint activity and primary dyads with members of the learning setting.

The foregoing hypotheses apply not only to the child's entry into school but to each successive transition and setting in the child's educational career; i.e., promotions from grade to grade, transfers from one classroom or school to another, graduations, etc. At a later point, when we discuss macrosystem influences on school effectiveness, we shall propose that the foregoing hypotheses have relevance for explaining the differential educational performance of various socioeconomic, ethnic, and other cultural groups in American society as a function of the extent and nature of direct interpersonal links existing between the school and the home.

Consideration of research bearing on these and subsequent hypotheses dealing with mesosystem influences is deferred until the other educationally relevant properties of such systems have been discussed.

Individual experience in the mesosystem. Thus far, we have been viewing direct interpersonal links as properties of a given mesosystem confined to a

pair of settings, one of which was the school. It is also possible to examine such links from a different perspective; namely, across a variety of settings as a characteristic of the life experience of the individual. Thus, most infants participate actively in only a few settings outside the home. But as children grow older, the number of settings in which they engage increases steadily. We suggest that this growing participation in multiple settings is not only a consequence of development; under certain conditions, it is also a cause. We now develop the idea in a series of hypotheses.

Hypothesis 9

> Development, learning, and the child's capacity to profit from educational experiences will vary as a function of the number of settings in which the child has engaged in joint activities and primary dyads, particularly when the other participant is an adult.

The hypothesis is based on the assumption that involvement in joint activity in a range of settings required the child to adapt to a variety of people, tasks, and situations thus increasing the scope and flexibility of his or her cognitive competence and social skills. Moreover, as mentioned previously, joint activities tend to develop a motivational momentum of their own that persists after the participants are no longer together. Where such activities occur in a range of settings, this motivational momentum tends to generalize across situations. Finally, these effects are further enhanced if the participants are emotionally significant in each other's lives (i.e., they are members of primary dyads).

The foregoing hypothesis has a corollary at a sociological level:

Hypothesis 10

The positive developmental and educational effects of participation in multiple settings are enhanced when the settings occur in different cultural or subcultural contexts; i.e., in terms of ethnicity, social class, religion, age group, etc.

Underlying this hypothesis is the assumption that differences in activities, roles, and relations are maximized when settings occur in culturally diverse environments.

A critical case for the foregoing two hypotheses would be represented by a person who had grown up in two or more cultures, had participated actively and widely in each society, and had developed close friendships among the people. If both hypotheses are valid, such a person, when compared with someone of the same age and status who had grown up in only one country and subculture, should exhibit higher levels of cognitive function and social skill, and be able to profit more from experience in an educational setting. Regrettably, the authors know of no research in which this kind of comparison has been made, but it could be (for example, among children from the same family where one child has lived abroad and another of the same sex has not, counterbalancing across families for age and birth order).

Transcontextual dyads. The preceding line of reasoning may be applied not only at the level of the individual but also of the dyad. Thus not only is it possible for a person to engage in joint activity in more than one setting, but for the dyad as well. Such a migrating two-person system is referred to as a transcontextual dyad. From an ecological perspective, there is reason to expect this type of structure to have special significance for development

and learning. To begin with, it is even more conducive to the formation of primary dyads than joint activity limited to a single setting. But more importantly, we suggest that the occurrence of transcontextual dyads in the life of the person, both presently and previously, may operate to enhance the person's capacity and motivation to learn. This possibility is based on the assumption that when a variety of joint activities are carried out in a range of situations but in the context of an enduring interpersonal relationship, the latter both permits the development of higher levels of skill and tends to generate especially strong and persistent levels of motivation. Applying this proposition to school learning leads to the following hypotheses.

Hypothesis 11

The capacity of the pupil to profit from educational experiences in the classroom will vary directly as a function of the number of transcontextual dyads in which he or she has participated, both in relation to the school and other settings.

Hypothesis 12

Children from cultural backgrounds that encourage the formation and maintenance of transcontextual dyads are more likely to profit from educational experiences in the classroom.

Hypothesis 13

The effectiveness of the school as a learning environment can be increased by providing experiences that allow for the formation and maintenance of transcontextual dyads.

Indirect Linkage

Second order social networks between settings can perform at least three important functions:

1. They provide an indirect channel of communication in situations where no direct links exist. For example, a working mother who cannot attend parents' meetings at school can find out what happened from a friend.
2. Second order networks can also be used for identifying human or material resources needed from one setting for use in the other. For instance, a parent may wish to find an older pupil who can help the child with homework; or a teacher may turn to local merchants for properties to use in a school play.
3. Finally, perhaps the most important mesosystem function of social networks is unintended; they serve as channels for transmitting information or attitudes about one setting to the other. From third parties, parents can be given a different story about what happened at school than the version brought home by the child; or, the teacher can learn "via the grapevine" that she is disliked by her pupils.

Although, as the preceding examples indicate, social networks can in some instances be vehicles of stress, we suggest that, in general, their existence facilitates working relations between settings and, thereby, their internal functioning as well. Hence, with respect to school effectiveness, we offer the following hypothesis:

Hypothesis 14

The effectiveness of the school as a learning environment is enhanced to the extent that there exist indirect network linkages between the school and other settings in which the

child is an active participant, notably the home. The absence of such linkages tends to impair the functioning of the school as an educational environment.

Intersetting Communication

We have already noted that intended communication between settings can take a variety of forms and can vary in the direction of flow. These are parameters that have been extensively investigated in communications research ( ). Hence propositions bearing on the influence of intersetting communication on school effectiveness can be drawn from this literature. Among many possibly relevant hypotheses, there are two that merit special attention.

Hypothesis 15

The capacity of the child to profit from educational experience in the classroom will vary directly with the extent of communication between the school and other settings in the child's mesosystem, especially the home.

Hypothesis 16

The positive impact on learning of communication between the school and other settings will be increased to the extent that the communication flows in both directions.

Hypothesis 17

The positive impact on learning of communication between the school and other settings is enhanced to the extent that the communications are personal (e.g., in descending order: face-to-face, phone, letter, announcement).

Intersetting Knowledge

As previously mentioned, information available in one setting about another can come from a variety of sources. In addition to communications between the

settings, these can include traditional knowledge handed from one generation to the next, one's own childhood experience, books, television, etc. Especially important are discussions in one setting about the other. For example, parents of a young child can describe what school will be like, or the school can offer courses in family life.

Intersetting knowledge can also take a variety of forms. In addition to oral or written information, advice, and opinion, it may involve objects from or representing the other setting (e.g., a child takes a favorite toy to school, a school banner hangs in the child's bedroom), and even experiences, both imaginary (e.g., role playing) and real (e.g., introductory visits).

As the foregoing examples indicate, intersetting knowledge can serve two somewhat different functions: 1) it can be presented prior to the person's entry into a new setting, often with the intention of preparing him or her for the transition; or 2) it can be provided after the person is already participating in the other setting, often with the aim of influencing his or her behavior in that setting. Recognition of each of these functions in relation to school settings generates two general hypotheses.

Hypothesis 18

The capacity of the child to profit from school experience will be increased to the extent that, prior to each transition into a new educational setting (i.e., school entry, promotion, transfer, graduation), he is provided with valid information, advice, and experience relevant to that setting.

Hypothesis 19

Once he or she enters an educational setting, the capacity of the child to learn will be enhanced to the extent that valid information, advice, and experience relevant to that setting is presented in the other contexts in which the child lives out

his life, notably in the family and in the neighborhood peer group.

General Mesosystem Properties

In addition to characteristics that are specific to particular types of interconnection between settings, there are certain features of the mesosystem that cut across particular kinds of linkage and describe more general parameters of a mesosystem structure. There are four such dimensions and they are already familiar to us, for they represent manifestations, at the next higher level, of the four functional aspects of the dyad; namely, reciprocity, differential proficiency, balance of power, and affective relation. We have already noted that the dyad constitutes the basic building block of ecological structure; we shall now see that it also constitutes a functional prototype for the operation of higher level systems. Aspects of the relation between two people in a microsystem reappear in the relation between two settings in a mesosystem. The only changes are modifications in terminology appropriate to the shift in context.

Reciprocity between settings. As we have seen, each type of interconnection between settings permits a two-way process; from or about setting A, to setting B, or vice versa. Paralleling a principle already adduced at the level of the dyad, we propose that the functioning of a mesosystem is enhanced as a function of the extent to which these interconnecting processes are reciprocal; i.e., involve exchange in both directions. With respect to school effectiveness, this proposition leads to the following hypothesis:

Hypothesis 20

The operation of the school as a learning environment is enhanced to the extent that processes of interchange between the school and other settings are bidirectional. This principle applies in all areas of interchange including intersetting

participation, indirect linkages, communication, and availability of knowledge.

Degree of similarity in activities between settings. Different settings are likely to vary in the activities that take place within them. For example, as Cochran (1977) has shown, patterns of ongoing behavior of preschool children and adults are rather different in home and preschool. It is likely, however, that the differences are greater for some children than others. The same conditions should hold for home and school, with some children engaging in more educational activities at home than others. We suggest that the degree of similarity in settings affects learning processes in a curvilinear fashion analogous in form and rationale to that posited earlier for comparative proficiency of participants in a dyad. Specifically, with respect to school effectiveness, the hypothesis reads as follows:

Hypothesis 21

Learning in the classroom is enhanced when there is some overlap between activities carried on at school and in the home or the neighborhood peer group, but with differences predominating over similarities.

Consistent with this hypothesis, children whose parents introduce school-like activities in the home would do better academically than those coming from families that did not encourage such activities, provided the degree of similarity was not so great that the school experience would begin to yield diminishing returns. This relationship should hold both for individual children in a given school and for variations in degree of similarity for particular combinations of schools and groups of families varying by social class, ethnicity, or other background factors.

Balance of power between settings. As with participants in a dyad, there can be difference in the extent to which one setting influences another. For

example, one may ask about the relative power of home and school in their dealings with each other. The question can be posed for successively higher-order structures beginning with a particular family or school and ending at the macrosystem level of the society as a whole. For example, schools in the Soviet Union have much greater authority over how parents treat their children than do schools in the United States (Bronfenbrenner, 1970a). But in terms of pressing problems of school effectiveness, the balance of power between school and home is probably more consequential at the level of differences between social classes, ethnic groups, communities, schools, and individual families. To state the issue in the form of a hypothesis bearing on our central concern:

Hypothesis 22

School effectiveness is likely to be greater when there is balance of power between home and school such that each has some influence over the other.

The hypothesis applies to each mode of interconnection between the two settings; i.e., participation, indirect linkage, communication, and knowledge of the other setting.

Intersetting attitudes. These represent the mesosystem analogue to affective relations between members of a dyad. As in the latter structure, relations between settings can be mutually negative, positive, mixed, or asymmetrical, and can affect the operation of each setting accordingly. To state the case in the form of a hypothesis relevant to school effectiveness:

Hypothesis 23

Learning is more likely to be enhanced when the relation between home and school is characterized by mutually positive attitudes rather than by negative, mixed, or asymmetrical feelings.

As before, the hypothesis could be assessed in each mode of interconnection between the two settings and could be applied at successive levels beginning with individual families and ending with society at large. The hypothesis also applies to all elements of the microsystem in each setting, including roles, activities, and relations. This more differentiated orientation merits statement in a separate hypothesis:

Hypothesis 24

The effectiveness of formal education will vary with the degree of consensus between family and school with regard to their respective responsibilities, goals, and modes of operation. To the degree that consensus is not achieved, schools will find it difficult to perform their educational function.

The foregoing hypothesis has special significance, given the lack of such consensus in many American communities today.

We have now concluded our examination of the properties of mesosystems and their implications for school effectiveness. We turn next to a consideration of some research evidence bearing on the hypotheses presented.

Research on Mesosystem Influences on School Effectiveness

From an ecological perspective, studies of mesosystem factors affecting classroom learning have been very limited in scope. For the most part, they have been restricted to effects of parent-child, and sibling relations on school performance, the latter almost invariably assessed by tests of academic achievement. Utilizing the same kinds of outcomes measures, a small body of research focusses on the impact of preschool experience on school learning (Bronfenbrenner, 1974b). Finally, a few, massive investigations (Jencks et al., 1972; Brittain, 1977) have examined the influence of schooling on subsequent

success in the outside world, but here the indices are crude on both sides of the equation. As we have already noted, educational experience is typically evaluated by the number of years of schooling, and success by a linear measure of occupational status. In terms of our mesosystem model, all of these researches have been confined to only one form of intersetting connection --the direct interpersonal link provided by the learner himself. No attention has been given to other mesosystem elements, such as direct links involving others, the existence and nature of transcontextual dyads, modes of intersetting communication, or knowledge available in one setting about the other. And even with respect to the learner himself, the conditions and consequences of ecological transition into, within, and out of different educational settings have seldom been examined.[7] The same comment applies to research on the effects of school experience on other key settings in the child's mesosystem, such as the family or the neighborhood peer group. It would appear likely, for example, that the child's entry into school, as well as successive promotions and graduations, would result in a restructuring of roles, activities, and relations in the home and also in the child's friendship networks outside of school.

There is one noteworthy, but comparatively unknown, educational investigation that does deal with many of these phenomena. Entitled "Home and School: Focus on Achievement" (Smith, 1968), it represents a transforming experiment at the level of the mesosystem, since it introduces a significant reorientation in the prevailing relation between family and school in contemporary American society. The experiment was designed to improve the school performance of low income minority pupils in the elementary grades. The reorientation in established practice is reflected in the three-fold purpose of the program, described by the author as follows:

> First, it restores to the family its rightful responsibility for teaching the child. Second, it gives the family pride in being the teacher. Third, it brings together the child's "significant others"--the parent and the teacher--as partners, not competitors or strangers, in the child's learning process. Neither can do this job in opposition to the other or in isolation. (Smith, 1968, p. 90)

The project involved approximately 1,000 children from low income families, most of them Black, attending two public elementary schools. Children of similar socioeconomic background in another elementary school in the same city were selected as controls. Among the procedures employed to achieve the stated objectives were the following:

1. To stimulate participation by parents, a group of thirty volunteer mothers were asked to assign blocks in their school district to themselves. Each then made a personal call on every family inviting parents to a planned program to "learn what they could do to help their children achieve better in school" (p. 95).
2. The program for parents was designed on the assumption that the parents wanted to help their children to succeed in school. At the initial meetings, their children's teachers explained to the parents that their help was needed. The parents were then asked to do the following:
   - Provide a quiet period in the home each day for reading and study assigned by the teacher. They were informed by the teacher that: "This period is to be at a regular time so that it becomes a part of

the life of the child....Remind the child of his assignment...Young children will forget."

- Listen to their children read.
- Read regularly themselves, in the presence of their children.
- Read aloud regularly to their children, including preschool-age children.
- Show interest in their children's work by asking questions, giving praise and encouragement when needed and deserved.
- Prevent the school-age child's work from being damaged or destroyed by preschool children.
- See that the child has pencils and paper at school and at home so that he has the tools necessary for doing a good job.
- Get the child to bed at a regular time each night so that he gets the proper sleep and rest.
- Get the child up each morning with adequate time for a good breakfast.
- Remind the child of work papers and books that should be returned to school. Young children need this assistance.

(pp. 94-95)

Parents who did not attend a meeting were visited by parents who had, and were brought up to date.

3. A bulletin was handed each parent at the meeting. The bulletin outlined the list of objectives described above as well as related details. The contents of the bulletin was discussed in detail, and parents were encouraged to take the material home

for reference. Such bulletins were provided at all subsequent meetings. Parents who had difficulty reading received the information orally. "Extra time and effort was undertaken to make the bulletins as neat and attractive as possible, communicating to parents that the school people had confidence in their abilities to cooperate, and—most important—respected them and considered them important. The goal was to enhance the self-concepts of parents so that they could, in the same way, enhance their children's self-concepts" (p. 95).

4. Kindergarten and primary children took a book home for their parents to read to them. On the days this was to happen, they wore tags on their lapels that read: "Please read to me." Older children were given bookmarkers imprinted "May I read to you." Fathers as well as mothers were encouraged to read to their children, "thus demonstrating, particularly to boys, that men also value reading." Fathers were also invited to take turns with library duties and to serve as "male storytellers" (p. 99).
5. It was suggested that, during quiet time, parents see that preschool children were occupied, that there be no talking on the telephone (callers should be asked to call back), and that radio and television sets be turned off. (But quiet time was not to be scheduled during favorite TV programs).
6. A child's dictionary was made available to each family with a child in grades four through six. "Families were encouraged to write their names on the inside cover to emphasize the satisfaction of <u>owning</u> a dictionary" (p. 98).

7. Although parents were asked to create conditions that would help the child get his homework done, they were informed that "homework assignments should require no teaching by the parent" (p. 96). This meant that each parent could do his or her part without having to be in command of school subject matter.
8. Parents were encouraged to discuss with parent's of their children's friends a common time period for homework, "thus providing group support for this effort. This planning also provided that 'Johnny' would not have to leave the same when it was his turn at bat or at the time when it was his turn to shoot at the 'purey' " (p. 97).
9. Teachers agreed to limit home assignments to 15 minutes for children in the primary grades and 30 minutes for those at upper elementary levels. Every morning, each child reported whether the assignment had been done. "Thus the child was checked on whether or not he had completed the task rather than how well it was completed. Every child could, therefore, be successful provided that his parents were giving the needed support at home. If a child frequently failed to complete a task, the parent was sought for a conference.... This record keeping by teachers assured each child that the two people concerned with his academic achievement were in constant communication with each other" (p. 97).
10. Teachers were provided with clerical assistants. Business students typed and duplicated materials prepared by the teachers and provided other services "thus freeing teachers to give more personal attention to students. This was one

of the greatest morale boosters for teachers that the program provided" (p. 102).

11. An inservice program for teachers emphasized the influence of environmental factors on children's classroom behavior and performance. Teachers were helped to understand "that the problem of the underschiever is not necessarily one of insufficient capacity or ability, but is frequently one of inadequate environmental support or motivation" (p. 93).
12. "An educational director from a local factory visited the schools and showed slides of people performing various skilled jobs. He explained the advance high school courses required for eligibility in his training programs and reminded the children that competence in science, reading, spelling, and mathematics would make them eligible for courses" (p. 101). In addition, Blacks in the area who held skilled jobs visited classrooms, explained work, and "told how their elementary school subjects had been important to them later in their lives" (p. 102).

Smith's transforming experiment is noteworthy in involving virtually all the interconnections we have stipulated for a mesosystem model, as well as the associated hypotheses regarding mesosystem influences on school effectiveness. Here is multisetting participation not only between the school and the home but also between the school and the world of work, along with the local neighborhood. Across these settings, opportunities are provided for establishing a variety of interpersonal links and transcontextual dyads that call for joint activity and facilitate the development of primary relationships. Virtually all modes of intersetting communication are employed, and considerable informa-

tion is offered in each setting about the other. Although no provision is made for facilitating ecological transitions into or within the school, attention is paid to preparing students for ultimate entry into the world of work. Finally, with respect to the overall relation between settings, major emphasis is given to reciprocal interaction between settings, overlap in activities, building positive attitudes in both directions, and to insuring a balance of power such that both parents and teachers can exercise and maintain a sense of control in their respective domains of complementary activity. Perhaps the only question to be raised about the program is whether pupils are given adequate opportunity to move toward greater self-direction in the course of their school experience.

There are serious shortcomings, however, in the range and quality of the data available on experimental outcomes. Results in quantitative form are limited to significant gain on tests of reading achievement, and parents' reactions to the program solicited in a questionnaire. The questionnaire brought a gratifying 90% return. Particularly favorable attitudes were expressed toward the home study program and reading experiences. Ninety-nine percent of the respondents wished the program to continue. It is greatly regrettable, however, that the imagination and comprehensiveness demonstrated in the planning of the experimental treatments was not matched in the selection of outcome measures. Had the research included at least some data on the roles, activities, and relations exhibited by experimental and control subjects in the classroom setting and, perhaps even more significantly, in the family and in the neighborhood peer group, the contribution of the study both for science and for educational practice would have been immeasurably enhanced.

This brings us to a concluding comment in our discussion of the significance of the mesosystem in research on school effectiveness. The concept of

mesosystems highlights the importance of examining relations between the school and other settings in which the learner actively participates. This concern for intersetting relations is especially pertinent to the assessment of school outcomes; specifically, it is essential to examine outcomes not only as they occur in the educational milieu in which they were generated, but also in the other settings in which the child lives out his life both immediately and in the future. In the immediate context, these extra-school settings include the home and the neighborhood, with particular regard to the execution of responsibilities, assignments, volunteered duties, and other work-related activities. In more extended time perspective, they encompass the young person's gradual assumption of adult roles in the community and the world of work, for these are the domains of an ever-expanding mesosystem, the spheres in which the ultimate test of school effectiveness lies.

IV. The Significance of the Exosystem for School Effectiveness

The exosystem has been defined as any setting that does not itself contain the developing person, but in which events occur that affect, and, occasionally, are affected by that person. The theoretical properties of the exosystem will turn out to be quite familiar, for, with one important exception, they are analogues to those we have previously outlined for the mesosystem. The exception is the absence, by definition, of any direct link between the mesosystem and the setting containing the developing person. In other respects, the exosystem exhibits all the modes of interconnection present for the mesosystem, extending along the same general dimensions. We may illustrate this point by concrete examples for exosystems for a child in the school setting. Thus the operation of a direct link is exemplified by a working mother who has been transferred to an early shift and, as a result, can attend parents' meetings at the school. An all too familiar instance of indirect

linkage is reduction by the Governor of state aid to local school districts. Classroom teachers are flooded by communications from the school administration. The importance of knowledge and opinion in one setting about another is illustrated at the level of the exosystem by the failure of local citizens to pass a needed bond issue. In each of these instances, the setting from which influence emanates is not one in which the pupil participates; yet his or her school experience is affected.

The foregoing examples also demonstrate the relevance, at the level of the exosystem, of such general functional parameters as reciprocity between settings, balance of power, and intersetting attitudes. The factor of similarity of activities would likewise be reflected in the presence or absence of overlap in the concerns of the school vis à vis a particular exosystem. Thus the teachers' union, while committed to enhancing the quality of education, necessarily has other priorities as well.

The applicability to the exosystem of theoretical ideas previously presented in relation to the meso-level holds not only for analytic concepts but also for hypotheses (except for those pertaining to transcontextual dyads, since these refer to a direct link involving the developing person). Accordingly, learning effectiveness should be enhanced when the interconnections between an external setting and one containing the developing person exhibit the properties stipulated in Hypotheses 22 to 24 with respect to the existence of direct and indirect links, communication between settings, knowledge in one setting about the other--as well as the general level of reciprocity, similarity, and compatibility in attitude.

If the conception of the exosystem presents no new analytic dimensions, what is its importance for science and social policy in the study of human development in general, and education in particular? The answer to this question lies in substance rather than theory. Although the effect of external factors on a microsystem such as the classroom is generally acknowledged,

little systematic research has actually been focussed on such interconnections. Thus, there are few studies of the influence on school learning of such mesosystem phenomena as events and conditions in the parent's work situation, the teacher's life outside the school, the activities of school boards, or processes shaping community attitudes toward education generally and the local schools in particular. While some of these phenomena are investigated in their own right, they are rarely examined in terms of their ultimate and most critical impact on learning experiences of children. There are, however, some notable exceptions. For instance, Elder (1974), in another classical example of ecological research, shows how the impact of the Great Depression on the family affected the behavior and experiences of children in the classroom.

But the most explicit and extended treatment of the impact of exosystems on the functioning of the school is provided by Ogbu's (1974) ethnographic study of interrelations between the school and other settings in the larger society. An anthropologist, Ogbu was asked to undertake such an investigation in connection with the introduction into the lower elementary grades of a bilingual (English and Spanish) instructional program. He defined his task broadly, and attempted to understand the educational beliefs and behaviors of community residents, teachers, school administrators, and pupils, and to explain the high rates of school failure found in the community.

"Burgherside" is an unincorporated area within the city limits of Stockton, California. Its population is predominantly Black and Mexican-American. Its elementary school is part of the Stockton school system and is staffed by middle class professionals who do not live in the neighborhood. Its residents have low incomes; many were born in Mexico or the southeastern United States.

The children of Burgherside perform poorly in school by all available measures. Their scores on state-wide tests are inferior, their report card

grades are low, their dropout rate is high, and the proportion who continue their schooling beyond high school is below average. Ogbu notes three current explanations for school failure among poor and minority children: cultural deprivation (or difference), weaknessess in schools, and genetic inferiority. He rejects all three and proposes a fourth: that school failure is an adaptation to the limited opportunities for social and economic mobility available to members of "subordinate" minorities. In other words, educational inadequacy represents a response to discriminatory practices found in the larger society.

"Subordinate minorities," in Ogbu's terminology, include Blacks, Mexican-Americans, and American Indians. They are distinguished from "immigrant minorities" who became Americans voluntarily. He points out that "subordinate" and "immigrant" minorities differ in their contemporary status and in their typical school performance.

The author interviewed adult Burghersiders and their children, school personnel, residents of continguous neighborhoods, as well as middle class residents and community leaders of Stockton. He attended community meetings and social events regularly, observed in homes and schools, and reviewed school records. Information gathered in this way gave him a picture of the beliefs held by Burghersiders about education and of their actions in relation to those beliefs. It also revealed the beliefs about Burghersiders on the part of "taxpayers"--middle class Stockton residents, including school personnel.

These data led Ogbu to his conclusion that school failure is an adaptation to discrimination and attendant barriers to occupational and social achievement in adult life. He described this adaptation as having three components at the level of school and community: students' failure to perform at the highest possible levels, the patron-client relationship between school

personnel and parents, and the definition of educational problems as clinical problems by school personnel.

The first of these components, students' failure to perform at maximum levels, is also Ogbu's explanation for at least part of the difference between the standardized test scores of subordinate minorities and those of other students. He argues that children in Burgherside, and others like them, simply do not attempt to maximize their scores on such tests. Neither do they try to get the highest possible grades in school. He cites interviews with students who professed satisfaction, almost universally, with "average" grades, and who saw no reason to attend school regularly.

The school personnel Ogbu interviewed, and other middle class Stocktonians, often told him that attitudes such as these resulted from parents' low expectations for their children. But his own inquiries of those parents, and his measures of their children's aspirations, revealed quite high occupational and educational hopes. Furthermore, he witnessed and was told about many ways in which parents urged their children to perform well in school. Ogbu inferred from his interviews and observations of parent-child interactions that parents were communicating a double message. They did urge their children to succeed in school and to aspire to high status occupations, and the children tended to internalize those aspirations; but they also told their children that they were going to be victims of discrimination and that their most strenuous efforts would be frustrated. This second message was less conscious than the first, and was often embedded in comments or stories about discriminatory practices encountered by the parents or acquaintances. The effects of the second message were evident not only in school failure but in the widespread tendency of children to doubt that they would attain the high aspirations they professed.

The label, "taxpayers," that Ogbu applies to middle class Stocktonians was borrowed from their own characterizations of themselves and it connotes much of what he means by the "patron-client relationship" between school personnel, representing middle class Stockton, and Burgherside parents. He employs the term with conscious irony because he also demonstrates that a remarkably high percentage of Burgherside residents own their homes and, therefore, pay property taxes. The "taxpayers" are the people who make the important decisions about Burgherside's school and about the secondary schools attended by Burgherside youth. School teachers, counselors, and administrators were uniformly identified with this group and saw themselves as its representatives in Burgherside.

The patron-client relationship is revealed in many ways. Meetings are called in the school and other community centers to discuss "the problems of Burgherside." Residents do attend, but the talking is done by "taxpayers," who define the problem, explain what is to be done about it, and then inform the residents of what they will have to do to make the plan work. The Burghersiders do not express their real opinions, nor are they asked to do so. They leave feeling resentful, and little or no progress occurs.

School personnel often cite poor communication as a factor in poor school performance, but they implicitly define communication as a one-way process. The school sends information to Burgherside homes by way of notes, phone calls, and personal visits, but parents are not given opportunities to state their concerns. Their resentment when an effective school principal was transferred to another school because he had done a good job in Burgherside was confined to the neighborhood because they were not consulted about school system actions. Their opinion that bilingual instruction would not help their children do

better in school, especially the children from English-speaking families, was unheeded because such decisions are made elsewhere and the parents' role is to accept and support such decisions in whatever ways school personnel recommend.

Basic to the patron-client relationship between school personnel and parents, according to Ogbu, are "three functional myths." The first myth is that parent involvement in the school promotes academic success. He disposes of this myth empirically by comparing grades of students whose parents are involved with those of students whose parents are not involved and finding no differences. He also describes cases in which changes in parent involvement had no effect on students' grades. In conclusion, he points out that no effects should be expected from parent involvement in the unequal relationship that prevails, except perhaps in the form of teachers feeling more sympathetic to children of parents who demonstrate proper deference.

The second myth is that Burgherside families have no fathers. Although the number of households headed by females is high, Ogbu finds that even fathers who are very concerned about their children's performance in school do not visit the school because among both Black and Mexican-American males, involvement in the school is defined as woman's work. The third myth is that Burghersiders are caught in a welfare cycle extending over generations, and that this cycle encourages high birth rates, and illegitimacy and discourages school performance. Ogbu shows this belief to be in conflict with the life histories of Burghersiders, their attitudes about welfare, and a comparison of their children's school performance of pupils in Stockton whose families received welfare, and of low income children not on welfare. None of the supposed differences was found.

The third component in school failure as an adaptive response to discrimination is, like the second, a reflection of the "taxpayers' " definition of

the situation. Ogbu finds that school personnel, particularly guidance counselors, tend to define educational problems as clinical problems and to pursue clinical treatments at the expense of academic assistance. Guidance counselors see themselves as therapists and diagnosticians. They spend their time making referrals to clinics and in one-to-one therapeutic counseling, rather than offering badly needed advice on routine academic matters such as course selection.

Among teachers, this tendency is expressed in a general attitude that the students are unable to learn because of their deprived backgrounds. The result is that standards are set low—teachers, like students, profess satisfaction with "average" performance--with the result that little differentiation is revealed among students or in the performance of the same students at different times. Ogbu traces report card comments on behavior and work habits over time to show that reported improvements in behavior are not reflected in higher grades.

The result of the definition of educational problems as clinical problems and the patron-client relationship between "taxpayers" and Burghersiders is that various educational reforms are imposed on the community to counteract "cultural deprivation" without the understanding or agreement of the parents and without touching on the realities of discrimination and unemployment.

Ogbu's work bears directly on interconnections between school, family, and neighborhood, and on the influence of economic conditions and community attitudes on school effectiveness. Moreover, he looks at the nature of the processes involved in these connections, rather than merely at the statistical correlations between low income, minority status, and poor school performance. In this respect, his work is fully consistent with the theoretical approach here proposed. His is truly an ecological study of school effectiveness at the level of both the meso- and exosystems in which schools are embedded.

Moreover, his findings provide substantial evidence in support of the hypotheses we have proposed regarding meso- and exosystem influences on school effectiveness, particularly with respect to the dimensions of reciprocity, balance of power, and intersetting attitudes. Replications of his study in other communities would be valuable, but not so valuable as experimental efforts aimed at altering some of the external conditions he identified as limiting school effectiveness. Educational researchers have yet to conduct transforming experiments at the level of the exosystem along the promising lines charted by Ogbu's outstanding study.

V. The Significance of the Macrosystem for School Effectiveness

Paradoxically, our analysis of the macrosystem as an ecological context affecting human development in general and classroom learning in particular has already been completed, insofar as the authors' skill and knowledge permit. It remains only to show how that task has been accomplished. The basis for this explanation is contained in the following proposition that postulates, not a specific hypothesis, but an entire domain of potential relationships subject to empirical investigation.

Hypothesis 25

School effectiveness is a function of the consistent pattern in organization and content of the micro-, meso-, and exosystems associated with particular ethnic, socioeconomic, and other cultural and subcultural groups.

The task of theory and research then becomes to specify these patterns and to investigate their relationship to processes and outcomes of learning in educational settings. It is from this perspective that the task of analyzing the nature of the macrosystem and its implications for education has, in substantial measure, already been carried out in the present monograph, for we have laid

out a conceptual framework that permits the specification of systems properties at the various levels and their interrelations. The needed empirical research can be pursued by two strategies. The first is to analyze systematically the ecological systems that presently exist for children living in particular cultural and subcultural circumstances, and to investigate how specific systems properties affect the course of their development of learning. Another is to seek to modify existing circumstances through "transforming experiments" designed to restructure prevailing ecological systems in ways that will enhance rather than impede psychological and educational growth. Regrettably, up until the present time, there have not been many investigations that have undertaken such analyses or experiments. The few we have been able to find have already been summarized in the preceding pages. In particular, there were three that addressed the systematic analysis of the ecology for particular socioeconomic or cultural groups; two are the studies of Kohn and Ogbu. The third, that by Smith, is the only one to attempt an experimental intervention that seeks to alter the structure of ecologies beyond the level of the microsystem.

In general, however, studies which exactly examine the organization and content of a macrosystem as it pertains to educational processes are comparatively rare. The typical pattern in the investigation of ethnic and cultural differences is to compare outcome in test performance with little or no attention to the nature of the ecological contexts in which these outcomes were obtained, or the processes through which they were achieved. The strengths and shortcomings of this kind of research are nicely illustrated in the design and results of a cross-cultural study conducted by a team of investigators including the senior author of the present monograph (Kav Venaki et al., 1976). The basic aim of the research was to study the phenomenon of ecological transition. The

sample consisted of 41 Russian-born adolescents who had immigrated to Israel. These youngsters participated in an experiment in which they were exposed to social pressure alternately from peers and then from adults. Instructions were given once in Russian and once in Hebrew. The results were then compared with those from previous studies involving Russian school children in Moscow, and native-born Israeli pupils in Tel Aviv schools. The results revealed that, regardless of the language of administration, levels of conformity for the emigré children fell between those for Soviet and Israeli youngsters, but were closer to the latter. Within the sample, the longer a child lived in one or the other society, the more his response to social pressure resembled the modal reaction of children in that society. Children from families who had or had not spoken Yiddish in the home showed marked differences in response, with the former resembling the Israeli and the latter the typical Soviet reaction. Contrary to the authors' hypotheses, when subjected to pressure from adults the emigré children gave more conventional moral responses under Hebrew than under Russian instruction. This result was interpreted as reflecting the tendency to respond more moralistically to the language of authority, which for the emigré children shifted from Russian to Hebrew. In general, the findings indicated that young people who had been exposed through early adolescence to the authoritarian regime characteristic of Soviet classrooms nevertheless, after only two years residence in a Western country, exhibited a markedly contrasting commitment to values of autonomy and independence. The residues of the earlier Soviet orientation were still present, but the characteristically autonomous Israeli response to social pressure was clearly stronger. It was impossible to determine from the available data, however, to what extent the response of the emigré children had its origins in an atypically liberal family upbringing while they were still living in the USSR.

Also, though the research does involve experimental manipulation, its purpose, again, is solely to measure developmental outcomes. The study makes no mention, for example, of possibilities for facilitating the ecological transition of the Soviet emigré children to ease their adaptation to Israeli culture. Yet, ironically, the children were enrolled in a program explicitly designed for this purpose in the very educational institution in which the study was conducted. It would not have been difficult to obtain data on the children's experiences in that program, or even to add a matching control group from among those whose entry into the program was delayed for bureaucratic reasons, a phenomenon that can be counted on even in the most individualistic Western societies. The fact that investigators did not avail themselves of such experimental opportunities may well reflect the inertia produced by prevailing research models; or, to use the terminology of our theory, the impact of the current scientific macrosystem. In our view, that macrosystem now contains ecological barriers that delimit scientific exploration. But the barriers are conceptual rather than real, often self-imposed, and hence readily transcended once we recognize their arbitrary theoretical existence. It is in overcoming these barriers that the promise for the future may lie both for educational research and educational policy.

Reference Notes

1. Nerlove, S., Bronfenbrenner, U., Blum, K., Robinson., & Koel, A. Transcultural code of molar activities of children and caretakers in modern industrialized societies. Cornell University, Ithaca, NY, 1977.

2. Lamb, M. E. Infants, fathers, and mothers: Interaction at 8 months of age in the home and in the laboratory. Paper presented at the meeting of the Eastern Psychological Association, New York, April 1975.

3. Lamb, M. E. A comparison of "second order effects" involving parents and siblings. Manuscript submitted for publication, 1977.

4. Pederson, F. A. Mother, father and infant as an interaction system. Paper presented at the meeting of the American Psychological Association, Washington, D.C., September 1976.

5. Simmons, R. G., Blyth, D., Brown, L., & Bush, D. Role of school environment and puberty on self-image development. Paper presented at the meeting of the American Sociological Association, Chicago, August 1977.

References

Barker, R. G., & Gump, P. V. Big school, small school. Stanford, Calif.: Stanford University Press, 1964.

Barker, R. G., & Schoggen, P. Qualities of community life. San Francisco: Jossey-Bass, 1973.

Barker, R. G., & Wright, H. F. Midwest and its children. Evanston, Ill.: Row, Peterson, 1954.

Benedict, R. Patterns of culture. New York: Houghton Mifflin, 1934.

Brittain, J. Inheritance of economic status. Washington, D.C.: Brookings Institute, 1977.

Bronfenbrenner, U. Response to pressure from peers versus adults among Soviet and American school children. International Journal of Psychology, 1967, 2, 199-207.

Bronfenbrenner, U. Two worlds of childhood: U.S. and U.S.S.R. New York: Russell Sage Foundation, 1970. (a)

Bronfenbrenner, U. Reaction to social pressure from adults versus peers among Soviet day school and boarding school pupils in the perspective of an American sample. Journal of Personality and Social Psychology, 1970, 15, 179-189. (b)

Bronfenbrenner, U. The origins of alienation. Scientific American, 1974, 231, 53-61. (a)

Bronfenbrenner, U. Is early intervention effective? A report on longitudinal evaluations of preschool programs, Vol 2. Washington, D.C.: Department of HEW, 1974. (b)

Bronfenbrenner, U. The experimental ecology of education. Teachers College Record, 1976, 78, 157-204.

Bronfenbrenner, U. Toward an experimental ecology of human development. American Psychologist, 1977, 32, 513-531.

Cochran, M. M. A comparison of group day and family child-rearing patterns in Sweden. Child Development, 1977, 48, 702-707.

Coleman, J. S. The adolescent society. Glencoe, Ill.: The Free Press, 1961.

Coleman, J. S. (Chairman), Youth: Transition to adulthood (Report of the Panel of Youth of the President's Science Advisory Committee). Chicago: University of Chicago Press, 1972.

Dewey, J. The school in society. Chicago: Univeristy of Chicago Press, 1913.

Dewey, J. Democracy and education. New York: Macmillan, 1916.

Dewey, J. The child and the curriculum. Chicago: University of Chicago Press, 1931.

Elder, G. H., Jr. Children of the Great Depression. Chicago: University of Chicago Press, 1974.

Garbarino, J., & Bronfenbrenner, U. The socialization of moral judgment and behavior in cross-cultural perspective. In T. Lickona (Ed.), Morality: A handbook of moral development and behavior. New York: Holt, Rinehart, and Winston, 1976.

Goslin, D. A. Children in the world of work. New Society: The Weekly Review of Social Issues, 1971, 2, 409-412.

Haney, C., Banks, C., & Zimbardo, P. Interpersonal dynamics in a simulated prison. International Journal of Criminology and Penology, 1973, 1, 69-97.

Husserl, E. Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie. Haag: Bremel, 1950.

Jencks, C., et al. Inequality: The reassessment of the effect of family and schooling in America. New York: Basic Books, 1972.

Katz, D. Der Aufbau der Farbwelt. Leipzig, Germany: Barth, 1930.

Kav Venaki, S., Eyal, N., Bronfenbrenner, U., Kiely, E., & Caplan, D. The effect of Russian versus Hebrew instructions on the reaction to social pressure of Russian-born Israeli children. Journal of Experimental Social Psychology, 1976, 12, 70-86.

Kessen, W. (Ed.), Childhood in China. New Haven, Conn.: Yale University Press, 1975.

Köhler, K. The place of value in a world of facts. New York: Liveright, 1938.

Kohn, M. L. Social class and parent-child relationships: An interpretation. American Journal of Sociology, 1963, 48, 471-480.

Kohn, M. L. Class and conformity: A study in values. Homewood, Ill.: The Dorsey Press, 1969.

Kohn, M. L. Class and conformity: A study in values (2nd ed.). Chicago: University of Chicago Press, 1977.

Kohn, M. L., & Schooler, C. Occupational experience and psychological functioning: An assessment of reciprocal effects. American Sociological Review, 1973, 38, 97-118.

Kohn, M. L., & Schooler, C. The effect of the substantive complexity of the job on intellectual flexibility: A longitudinal assessment. American Journal of Sociology, in press.

Lamb, M. E. Effects of stress and cohort on mother- and father-infant interaction. Developmental Psychology, 1976, 12, 435-443. (a)

Lamb, M. E. Interactions between eight-month-old children and their fathers and mothers. In M. E. Lamb (Ed.), The role of the father in child development. New York: Wiley, 1976. (b)

Leontiev, A. N. Problems of mental development. Washington, D.C.: U. S. Joint Publications Research Service, 1964.

Lewin, K. A dynamic theory of personality. New York: McGraw-Hill, 1935.

Lewin, K. Field theory in social science. New York: Harper, 1951.

Linton, R. The study of man. New York: Appleton, Century, 1936.

Mead, G. H. Mind, self, and society. Chicago: University of Chicago Press, 1934.

Ogbu, J. U. The next generation. New York: Academic Press, 1974.

Olds, D. Cross-age tutoring and parent involvement. Doctoral dissertation, Cornell University, 1976.

Parke, R. D. Parent-infant interaction: Progress, paradigms, and problems. In G. P. Sackett & H. C. Haywood (Eds.), Application of observational-ethological methods to the study of mental retardation. Baltimore, Md.: University Park Press, 1976.

Piaget, J. Play, dreams and imagination in childhood. London: Routledge and Paul, 1962.

Rosenthal, R., & Jacobson, L. Pygmalion in the classroom: Teacher expectation and pupils' intellectual development. New York: Holt, Rinehart, and Winston, 1968.

Seaver, W. B. Effects of naturally induced teacher expectancies. Journal of Personality and Social Psychology, 1973, 28, 333-342.

Sherif, M., Harvey, O. J., Hoyt, B. J., Hood, W. R., & Sherif, C. W. Intergroup conflict and cooperation: The robbers cave experiment. Norman: University of Oklahoma Book Exchange, 1961.

Shouval, R., Kav Venaki, S., Bronfenbrenner, U., Devereux, E. C., Jr., & Kiely, E. The anomalous reaction to social pressure of Israeli and Soviet children raised in family versus collective setting. Journal of Personality and Social Psychology, 1975, 32, 477-489.

Simmons, R. G., Rosenberg, F., & Rosenberg, M. A disturbance in the self-image of adolescents. American Sociological Review, 1973, 38, 553-568.

Smith. M. B. School and home: Focus on achievement. In A. H. Passow (Ed.), Developing programs for the educationally disadvantaged. New York: Teachers College Press, 1968.

Sullivan, H. S. Conceptions of modern psychiatry. Washington, D.C.: Williams Alanson White Psychiatric Foundation, 1947.

Thomas, W. I., & Thomas, E. S. The child in America. New York: Alfred Knopf, 1928.

Venger, L. A. Pedagogika Sposobnostei (The education of abilities). Moscow, 1973.

Vygotsky. Thought and language. Cambridge, Mass.: MIT Press, 1962.

Zaporozhets, A. V., & Elkonin, D. B. The psychology of preschool children. Cambridge, Mass.: MIT Press, 1971.

Zaporozhets, A. V., & Markova, T. A. Vospitanie i Obuchenie v Detskon Sadu (Upbringing and instruction in kindergarten). Moscow: Pedagogika, 1976.

Zhukovskaya, R. E. Igra e ee Pedagogichesko e Znachenie (The game and its pedagogical significance. Moscow: 1976.

Footnotes

[1]The work of Barker and his colleagues (Barker & Gump, 1964; Barker & Schoggen, 1973; Barker & Wright, 1954) represents a notable exception, although much of their data is molecular and does not include information bearing on the other elements of the microsystem, such as social structural properties (see below).

[2]One society that does is the People's Republic of China. For a description see Kessen (1975).

[3]Indexed by agreement or disagreement with such assertions as: "the most important thing to teach children is absolute obedience to their parents"; there are two kinds of people in the world: the weak and the strong"; and "in this complicated world, the only way to know what to do is to rely on leaders and experts" (Kohn, 1969, p. 79-80).

[4]The raw data are actually broken down into steps, such as "some grade school," "grade school graduate," "some high school," etc. From the perspective of an ecological model, it would have been desirable (and quite feasible) to examine the relative impact of each setting and transition on value change.

[5]The most detailed description appears in a documentary film entitled "A Place to Meet, A Way to Understand," distributed by the National Audio-Visual Center, Washington, D. C. 20409.

[6]The application of this principle is illustrated in an experiment on cross-age tutoring by Olds (1976). Olds found that the learning of both tutor and tutee was more likely to be enhanced when their respective levels of knowledge and skill were neither similar nor too different.

[7]A notable exception is the work of Simmons (1973, Note 5) on the impact on self-esteem of transition to secondary school after six versus eight elementary grades.